WHAT IS CLAIMED IS:

1. A method for aiding in the diagnosis or monitoring of Alzheimer's disease in a patient, said method comprising:

measuring the amount of one or more soluble $A\beta(x-\geq 41)$ in a patient sample;

comparing the measured amount with a predetermined amount of said one or more soluble $A\beta(x-\geq 41)$; and

assessing patient status based on a difference between the measured and predetermined amounts.

2. A method as in claim 1, wherein the predetermined amount of $A\beta(x-\geq 41)$ is an indicator value and wherein a measured amount above the indicator value provides a negative indication in the diagnosis of Alzheimer's disease and a measured amount at or below the indicator value provides a positive indication in the diagnosis of Alzheimer's disease.

3. A method as in claim 2, wherein the patient sample is CSF and the indicator value is between about 0.45 ng/ml and about 0.7 ng/ml.

4. A method as in claim 2, wherein the patient sample is CSF and the indicator value is about 0.5 ng/ml.

5. A method as in claim 4, wherein the $A\beta(x-\geq 41)$ measured contain at least $A\beta$ amino acids 33-41.

6. A method as in claim 1, wherein the predetermined amount is a value measured from the same patient at an earlier time and the method provides for monitoring.

7. A method as in claim 1, wherein the amount of soluble $A\beta(x-\geq 41)$ is measured by exposing the patient sample to a first binding substance specific for a junction region on $A\beta$ or $A\beta$ fragment disposed between amino acid residues 13 to 26

and detecting binding between the first binding substance and the soluble Aβ(x-≥41) by exposing the patient sample to a second binding substance specific for Aβ(x-≥41).

8. A method of claim 7 wherein the second binding substance is an antibody recognizing an epitope on Aβ having amino acid residues 33-42.

9. A method as in claim 8, wherein the first binding substance is an antibody recognizing an epitope on Aβ having amino acid residues 13-26.

10. A method as in claim 9, wherein binding of the first binding substance and the soluble Aβ(x-≥41) is detected by separating bound complexes of the binding substance and Aβs or Aβ fragments, exposing the separated bound complexes to a labeled second binding substance specific for Aβ(x-≥41), and detecting the presence of label on the bound complexes.

11. A method for detecting a soluble amyloid-β peptide(x-≥41) (Aβ(x-≥41)) in a fluid sample, said method comprising:

capturing soluble Aβ(x-≥41) from the sample using a first binding substance specific for a junction region on Aβ; and

detecting capture of soluble Aβ(x-≥41) using a labeled second binding substance specific for Aβ(x-≥41).

12. A method as in claim 11, wherein the fluid sample is cerebrospinal fluid.

13. A method as in claim 11, wherein the soluble Aβ(x-≥41) is captured on a solid phase, and the capture is detected by exposing the solid phase to the labeled second binding substance and thereafter detecting the presence of the label on the solid phase.

14. A system for detecting soluble amyloid-β peptide(x-≥41) (Aβ(x-≥41)) in a fluid sample, said system comprising:

a first binding substance specific for an epitope in a junction region of Aβ between amino acid residues 13-26; and a second binding substance specific for an epitope of Aβ(x-≥41) but that does not cross react with an epitope of Aβ(≤40);

wherein one of the first and second binding substances is bound to a solid phase and the other is labeled.

15. A system as in claim 14, wherein the second binding substance is specific for an epitope having amino acids 33-42 of Aβ.

16. A system as in claim 14, wherein the first binding substance is bound to a solid phase and the second binding substance is labeled.

17. A system as in claim 14, wherein the first and second binding substances are antibodies.

18. A system as in claim 14, wherein the second binding substance is bound to an enzyme label.

19. A system as in claim 18, further comprising substrate for the enzyme.

20. A method for screening a compound to determine its ability to alter the amount of Aβ(x-≥41) in the CSF comprising;

measuring a first amount of one or more soluble Aβ(x-≥41) in the CSF of a non-human animal used as a model of Alzheimer's disease;

administering the compound to the non-human animal;

measuring a second amount of said one or more soluble Aβ(x-≥41) in the CSF of the non-human animal; and

comparing the first amount with the second amount, the difference indicating whether the compound increases, decreases, or leaves unchanged the amount of soluble Aβ(x-$\geq$41) in the CSF.

21. The method of claim 20 wherein the non-human animal is a rodent.

22. The method of claim 21 wherein the rodent is a mouse.

23. A method for aiding in the diagnosis or monitoring of Alzheimer's disease in a patient, said method comprising:

measuring the amount of one or more soluble Aβ(x-$\geq$41) in a patient sample;

comparing the measured amount with a predetermined amount of said one or more soluble Aβ(x-$\geq$41);

measuring the amount of tau in a patient sample;

comparing the measured amount with a predetermined amount of said tau; and

assessing patient status based on a difference between the measured and predetermined amounts of Aβ(x-$\geq$41) and tau.

24. A method as in claim 23, wherein the predetermined amount of Aβ(x-$\geq$41) and tau are indicator values and wherein a measured amount at or below the Aβ(x-$\geq$41) indicator value and at or above the tau indicator value provides a positive indication in the diagnosis of Alzheimer's disease, and wherein a measured amount above the of the Aβ(x-$\geq$41) indicator value and below the tau indicator value provides a negative indication in the diagnosis of Alzheimer's disease.

25. A method as in claim 24, wherein the patient sample is CSF, the indicator value for Aβ(x-$\geq$41) is between

about 0.45 ng/ml and about 0.7 ng/ml and the indicator value for tau is about 0.25 ng/ml and about 0.4 ng/ml.

26. A method as in claim 24, wherein the patient sample is CSF and the indicator value is about 0.5 ng/ml and the indicator value for tau is about 0.3 ng/ml.

27. A method as in claim 26, wherein the $A\beta(x-\geq 41)$ measured contain at least $A\beta$ amino acids 33-41.

28. A method as in claim 23, wherein the predetermined amounts are values measured from the same patient at an earlier time and the method provides for monitoring.

29. A method as in claim 23, wherein the amount of soluble $A\beta(x-\geq 41)$ is measured by exposing the patient sample to a first binding substance specific for a junction region on $A\beta$ or $A\beta$ fragment disposed between amino acid residues 13 to 26 and detecting binding between the first binding substance and the soluble $A\beta(x-\geq 41)$ by exposing the patient sample to a second binding substance specific for $A\beta(x-\geq 41)$.

30. A method of claim 29 wherein the second binding substance is an antibody recognizing an epitope on $A\beta$ having amino acid residues 33-42.

31. A method as in claim 30, wherein the first binding substance is an antibody recognizing an epitope on $A\beta$ having amino acid residues 13-26.

32. A method as in claim 31, wherein binding of the first binding substance and the soluble $A\beta(x-\geq 41)$ is detected by separating bound complexes of the binding substance and $A\beta$s or $A\beta$ fragments, exposing the separated bound complexes to a labeled second binding substance specific for $A\beta(x-\geq 41)$, and detecting the presence of label on the bound complexes.

33. A method for screening a compound to determine its ability to alter the amount of both Aβ(x-≥41) and tau in the CSF comprising:

measuring a first amount of one or more soluble Aβ(x-≥41) in the CSF of a non-human animal used as a model of Alzheimer's disease;

measuring a first amount of tau in the CSF of the non-human animal;

administering the compound to the non-human animal;

measuring a second amount of said one or more soluble Aβ(x-≥41) in the CSF of the non-human animal;

measuring a second amount of tau in the CSF of the non-human animal; and

comparing the first amounts with the second amounts, the difference indicating whether the compound increases, decreases, or leaves unchanged the amount of soluble Aβ(x-≥41) and increases, decreases, or leaves unchanged the amount of tau in the CSF.

34. The method of claim 33 wherein the non-human animal is a rodent.

35. The method of claim 34 wherein the rodent is a mouse.

36. A kit comprising a binding substance that binds Aβ(x-≥41) but that does not bind to Aβ(≤40) and a binding substance that binds to tau.

37. The kit of claim 36 further comprising a binding substance that binds Aβ or a fragment of Aβ but that does not bind other fragments of APP.

38. The kit of claim 37 wherein the binding substance that binds Aβ(x-≥41) but that does not bind to Aβ(≤40) binds to an epitope containing amino acids beyond number 40 in Aβ and

the binding substance that binds Aβ or a fragment of Aβ but that does not bind other fragments of APP binds to the junction region of Aβ.

39. The kit of claim 38 comprising a) an un-labeled binding substance that binds to the junction region of Aβ; b) a detectably labelled binding substance that binds to an epitope containing amino acids beyond number 40 in Aβ; c) an un-labelled binding substance that binds to tau; and d) a detectably labelled binding substance that binds to tau.

40. The kit of claim 39 wherein the binding substances are antibodies.

41. The kit of claim 40 wherein the antibodies are monoclonal antibodies.

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